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WORDS AND MORPHEMES IN READING.

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THIS REPORT REPRESENTS AN ASSESSMENT OF THE FIRST FULL SCHOOL YEAR OF 1,429 FOURTH AND SEVENTH GRADERS RECEIVING TITLE I INSTRUCTION IN 16 SCHOOL DISTRICTS OF NORTHERN APPALACHIA. THE STUDY WAS CONCERNED WITH THE EFFECTIVENESS OF VARIOUS PROJECTS ON THE READING ACHIEVEMENT OF CHILDREN. THE FOLLOWING QUESTIONS ARE CONSIDERED PERTINENT TO THE EVALUATION--(1) WERE THERE SIGNIFICANT DIFFERENCES BETWEEN DISADVANTAGED CHILDREN RECEIVING TITLE I INSTRUCTION AND DISADVANTAGED CHILDREN NOT RECEIVING SUCH INSTRUCTION, (2) WERE THERE SIGNIFICANT DIFFERENCES BETWEEN PUBLIC AND NONPUBLIC CHILDREN, (3) WHAT RELATIONSHIP EXISTED BETWEEN READING PROGRESS AND SOCIOECONOMIC BACKGROUNDS, (4) WAS SPECIALIZED READING INSTRUCTION EFFECTIVE FOR ELEMENTARY AND SECONDARY SCHOOL CHILDREN, (5) WHAT RELATIONSHIPS EXISTED BETWEEN THE ORGANIZATION FOR INSTRUCTION AND READING ACHIEVEMENT, (6) WAS THERE ANY RELATIONSHIP BETWEEN THE CLASSROOM BEHAVIOR OF TITLE I TEACHERS AND STUDENT ACHIEVEMENT, AND (7) WAS THERE ANY RELATIONSHIP BETWEEN READING ATTITUDE AND READING ACHIEVEMENT. FOURTH-GRADE RURAL CHILD MADE THE GREATEST GAINS. THE ATTITUDES OF FOURTH GRADERS BUT NOT OF SEVENTH GRADERS WERE ALTERED SUCCESSFULLY. THERE WAS NO SIGNIFICANT DIFFERENCE BETWEEN PUBLIC AND NONPUBLIC SCHOOL CHILDREN. TABLES AND APPENDICES ARE PROVIDED. (WL)

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Words and Morphemes in Reading

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As written language developed and the alphabetic principle evolved, graphic displays shifted from direct representation of meaning to representation of oral language. Letter sequences were designed to represent sound sequences. Much later the device of using extra space at appropriate intervals in written language to create segmental units was introduced and the already existent term word was applied to these units.[1] Like spelling patterns, word boundaries stabilized and conventions grew up which were in fact much more resistent to change than comparable phenomena in oral language. As language analysis developed, particularly in the form of dictionary making, written language and not oral language became its vehicle. The word was indeed a useful unit. Its range of meanings could be recorded, its grammatical functions listed, its relationships to other words induced. Just as spelling was intended to reflect phonology so written words were intended to correspond to actual segments of speech (even the term "parts of speech" suggests this). But initial inadequacies in understanding and transcribing the

1. Introduction of white space to separate words did not take place until about the 11th century. Huey, E. B., The Psychology and Pedagogy of Reading, Macmillan, 1908, Reprinted Cambridge MIT Press, 1968.

segmental units of oral language created a gap. As the word concept in written language codified and oral language continued to change the lack of fit between oral and written language on this segmental level widened.

When linguists began to study segmental units in speech they found the need for a new term, morpheme, to describe these units. Words, those conventional units of written language separated by white space do not really exist in speech. The word has become a unit of written language.

All this of course would be of only academic interest, if it were not that much of the research on language and the teaching of language has been based on the assumption that (a) words are natural units of language (b) words in print correspond to words in speech. In reading in particular the focus on words has grown in great part from the mistaken assumption that they were the gestalts of language. Thus when Gray and others recognized that reading instruction had to deal with something more than matching letters and sounds they moved to a word focus. They took for granted that words were perceptible units even to beginning readers. Reading came to be closely tied to the acquisition of an expanding sight vocabulary, a repertoire of learned wholes. Though this is of course an oversimplification of what its detractors called the look-say approach to reading, the best proof of how word centered it was is in the evidence from research that in reading tests based on this approach simple word recognition tests correlate quite

highly with total scores. Such correlations have been interpreted as proving the validity of word recognition focus in reading instruction. On the contrary all that they prove is that children tend to learn what they are taught. Ironically, if we test the ability to recognize words as evidenced by our ability to match their printed form with an oral equivalent, children given phonics training tend to do somewhat better than their sight word peers in the stages when the repertoires of the latter group are limited. Chall and others have taken this as evidence that phonics, as such, is a necessary base for early reading instruction. If one could equate language with words and reading was only a matter of finding the oral equivalent for the written form then this perhaps would be true. The question would be simply whether to use a method in which words were taught and the phonic relationships induced or discovered by the learners (word centered) or a method in which phonic relationships were taught and words were acquired through phonic attacks (phonics centered). In her recent comparison of studies of reading methods Chall used seven basic criteria.[2] Four of

2. Chall, Jeanne. Learning to Read: The Great Debate. New York: McGraw-Hill, 1967.

them involve word recognition in some sense, one is letter sound correspondences, one involves speed and only one involved comprehension. The obvious focus was on the word as an end in itself. Thus "the great debate" is caught within the confines of the word. If we can clarify the relationships of words to

written language and to comparable (but not corresponding) units of oral language we may not only shed light on the phonics-word controversy but perhaps demonstrate that the debate is quite obsolete: a relic of the history of reading instruction.

Modern insight into the relationships between oral and written English on the letter-sound level has already shown that these relationships are much more complex than letters having sounds, or letters representing sounds or phonemes corresponding to graphemes. This complexity is not simply a case of regularities and irregularities as has been commonly assumed even by many linguists who turned their attention to reading. What appears as irregularity to the casual observer results actually from the different ways that phonemes (oral symbols) relate to oral language and graphemes (written symbols) relate to written language. As Venezky has indicated we find regularity if we treat the symbols as part of separate systems each with a set of rules governing their patterning.[3] The

3. Venezky, Richard. "English Orthography: Its Graphical Structure and Its Relation to Sound", Reading Research Quarterly, Vol. II, No. 3.

relationships are between these patterned systems rather than between the unitary symbols themselves. Thus the common sounds in church, situation, and watch are irregularly represented if we match one unit of speech to one of writing but quite regularly represented if we match patterns with patterns. Phonics then must be more broadly redefined if it is to have any meaning at

all. We must see it as the complex set of relationships between the phonological system of oral language and the graphic system of written language. Such a definition will also help us to see that variations in the phonological system among dialects of English are accompanied by variations in the phonics relationships since the graphic system tends to be stable across dialects.

We must view words and morphemes also as segmental units which relate through rules to the patterned systems of which they are part. Both words and morphemes tend to take on a reality in our minds they do not quite deserve because of their apparent stability in a variety of linguistic settings. Instead of regarding them as useful constructs for dividing longer units of language (sentences, utterances, sequences of discourse) into segmental units we begin to regard the longer units as accumulations of words or morphemes.

In actuality of course these molecular segments have no existence apart from language structures. What we call their meaning is in reality the portion of the meaning of a larger unit that may be assigned to one segment. What we write in dictionaries is the range of possible meanings assignable to a given word in the sentences in which it may occur. As many entries are made in the dictionary for a word as there are ranges of meaning for the word. The meaning of a sentence depends on the words or morphemes that compose it but it is always more than the sum of their meanings. Similarly one may

speak of the grammatical functions of words or morphemes but these are only the portions of the syntax of a sentence assignable to the segmental unit.

In Chomsky's view the syntactic component of language begins with a base consisting of context free rules the function of which is "to define a certain system of grammatical relations that determine semantic interpretation and to specify an abstract underlying order of elements that makes possible the functioning of the transformational rules."[4]

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4. Chomsky, Noam. Aspects of the Theory of Syntax, Cambridge: MIT Press, 1965, p. 141.

The end of the generative process results in choice of specific forms of specific morphemes in specific sequences that fulfill the grammar-meaning-phonology constraints that have been imposed by the rules.

Here is a simple discourse that illustrates how this works:

Mother: Mary, will you ask Jimmy to hang up his jacket.

Mary: Hey Jim, hang your stuff up.

Jim: I did.

Here each speaker is conveying essentially the same information concerning the hanging up of the jacket. The situation in which the discourse is occurring and its sequence evoke a set of rules that result in varying actual utterances. Jim, in fact, need only use a pro-noun and a pro-verb to represent the entire sequence: James hung up his jacket. He is able to

effectively communicate his response with no resort to meaningful terms. Literally he cites an underlying grammatical pattern. Alternate responses could have been similarly communicated: Yes, I will; No, I won't; I don't have to (pronounced hafta). This last could elicit the following repartee:

Mary: You got to (gotta).

Jim: I don't either.

Mary: You do too.

Jim: Why?

Mary: Mom said so.

Only in the last do we get any new meaningful element and even there so represents that James should hang up his jacket.

It sould serve no useful function to describe in detail the sequence of rules required to produce these utterances. The important point is that language in its ordered flow is the medium of communication and not words or morphemes.

In receptive phases of language, reading and listening we work backward from the surface structure deriving the rules and subsequently the deep structure. But we cannot and do not treat words in print or morphemes in speech as independent entities. We must discover the grammatical relations in order to determine the semantic interpretation.

Educated, literate speakers of language have learned to think of words as self evident entities, and to impose the characteristics of written words on oral language. Their

perception of language is influenced but this should not be confused with reality.

The remainder of this paper will explore morphemes and words as segmental units, the lack of one-to-one correspondence between them and the implications for reading instruction.

Morphemes, Oral Language Molecules

Like the molecule the morpheme is the smallest segment which has all the basic characteristics of the larger system. The morpheme's capability of carrying syntactic and/or semantic information distinguishs it from smaller segmental units, phonemes, that must be integrated into morphemes before they can really be considered linguistic units (Actually a few morphemes are only one phoneme ions).

It is useful to treat morphemes as being divided into two classes, free and bound. Free morphemes occur in a variety of settings with relative freedom from accompaniment of other specific morphemes. Bound morphemes occur in more limited settings and always in precise relationship to another relatively limited set of morphemes, usually free morphemes.

In walked,walk is a free morpheme and ed is a bound morpheme, one of a small number of bound morphemes in English that carry primarily grammatical information. This bound morpheme (ed) always occurs as a suffix of certain verbs. It has three basic variants (allomorphs); they occur in complementary distribution with the choice made on phonological grounds; the final consonant in the base determines the particular allomorph.

This type of inflectional suffix is a remnant of what was once a more general aspect of English grammar.

Other bound morphemes serve derivational functions and carry more semantic information. The er in worker makes a noun of the verb work and adds the someone who meaning. Other bound morphemes take the form of semantic prefixes. The problem with these is that they range from old dead Latin bound morphemes to current more active ones. These dead forms have lost their ability to combine freely with all appropriate morphemes. In a sense they have lost their separateness. In verb formations English speakers seem to prefer to use common verbs with particles to produce discontinuous verbs rather than use older forms with prefixes. We don't dissect we cut up. We would rather eat up than consume. It's easier for us to tear down than demolish. Or at least it seems easier because this verb-particle system is a live one that can be used flexibly to handle meanings. There is even a tendency in English to redundantly supply another carrier of the same meaning as the prefix. Thus we say combine with, reflect back, attach to, enter into, descend from, eject from, provide for, submerge under. The bases that prefixes attach to are frequently not free English morphemes but also old Latin ones which only occur in such combinations and hence must be regarded as bound morphemes themselves. In a sequence like combinations one can find 5 bound morphemes but no free morphemes.

The degree that particular bound morphemes will be apparent segmental units to any given speaker of the language and that he will be able to separate a given bound morpheme from a base form

is variable. Most speakers treat words like descend as single units.

Intonation, particularly relative stress, is very much involved in relating morphemes, and influences some phonological options. Verb-noun pairs such as produce/produce, contract/contract, record/record are examples of how the relationship between morphemes produced by intonation affects meaning. In the sentence All blackboards aren't black boards we can distinguish, by the relative stress, boards that are black from those that are for use with chalk. The closer relationship between the two morphemes in blackboard than in black board results in what we have called compounds (two free morphemes united). And of course we do represent that relationship in print by an absence of white space or a hyphen in place of the white space. But neither device consistently represents this compounding. Blood test is a compound but it is not joined when used as a noun (He took a blood test) and hyphenated when used as a verb (We blood-tested our chicks). We have eye doctor, eyebrow, eyelid, eye-catching. All have the stress pattern of compounds. The conventions of print do not directly correspond to the intonational devices of oral language.

One phase of intonation used to relate morphemes more or less closely is juncture; the length of pause between morphemes can be varied. Nitrate has a different kind of juncture than night rate. However these junctures are only relatively different and in the flow of speech it is often quite difficult to discern any difference. A speaker can of course intentionally

exaggerate the juncture to be sure ambiguity is avoided. But is a certain tooth paste proved effective or proved defective?

What further complicates things is that morphophonemic rules cut across morpheme boundries in the flow of speech. The same rule that operates in situation applies to can't you (cancha). We find education and don't you (doncha). Certain sequences involving these morphophonemic rules are so common that their constituents are apparently not distinguished by young speakers. Have to (hafta), going to (gonna), with them (with'm), with him (with'm), must have (must'v), should have (should'v) are examples. Only the meager set of contractions recognized in print represent this phenomenon, and even those are avoided in some situations. One unit in speech is represented by two in print. The resulting problems affect both reading and spelling. The problem does not confine itself to children. Adults often have difficulty distinguishing segmental units in idiomatic or archaic expressions. Recently an undergraduate used this spelling in a paper I received: anotherwards (in other words). Teachers are quite familiar with what happens when children are asked to write the Pledge to the flag or the national anthem. I must confess for many years I was saying in the visible (indivisable).

Jones has indicated that the difficulty in determining junctures is not confined to the uninitiated. Phoneticians employed in her research study frequently could not find expected differences in pause length. Prepositions and articles on the basis of their limited privilege of occurrence and the

junctures which separated them from the next morpheme behaved very much like prefixes.[5]

5. Jones, Margaret Hubbard. "Some Thoughts on Perceptual Units in Language Processing", The Psycholinguistic Nature of the Reading Process, Goodman, Editor, Wayne State University Press, in press.

Any one can confirm the difficulty of using purely intonational cues in segmenting the flow of speech into free and bound morphemes by listening to a brief statement in an unfamiliar language and trying to guess how many units are heard by a speaker of the language. Native speakers do of course bring their user's knowledge of the language to bear on the same task. Stable units are perceived by them as segments of wholes.

Recent research on child language development has demonstrated that children at early ages do produce language that can be segmented into morphemes.[6] Berko has also demonstrated that

6. McNeil, David. "Developmental Psycholinguistics" in The Genesis of Language, editors Smith and Miller, MIT Press, 1966.

children have mastered rules relating to inflectional suffixes, as demonstrated by their ability to produce the expected allomorph for nonsense bases she supplied.[7] It's obvious that

7. Berko, Jean. "The Child's Learning of English Morphology" Word, XIV, pp. 150-77, 1958.

parallel to their mastery of grammatical and phonological rules children are also acquiring a sense of language units. Parents are well aware of a stage when children begin to ask such questions as "What does _____ mean?", selecting a unit from language they have heard. Some of the funny sounding language

children produce consisting of unsuccessful efforts at interchanging units that are assumed to be equivalent by the child. It must be reiterated however that children speak in language, not words, and that the sense of morphemes does not precede their use of sentences. The whole is not a combining of parts; the part is differentiated out of the whole.

Words, Written Language Molecules

Words, unlike morphemes, are very easy to identify as units. One can pick up a page written in an unfamiliar language that employs words as graphic units and easily count the number of words. In producing written language identifying word units creates a more difficult problem; ultimately the producer of written language must remember what is and what is not a word.

To the literate, words are familiar units in language sequences and in non-linguistic settings. Words occur in lists, dictionaries, and in fact anywhere that we choose to put them. Of course one can recite a list of morphemes too. But that's not very common. The trouble is, again, that words are not the real entities that they appear to be. They retain their physical appearance as entities but they lose much of their semantic and syntactic quality as language units. A list of five words is not at all comparable to a five word sentence. This confusion of words as entities and as units of written language has been evident in a great deal of reading research and practice. It has also been evident in much of the research on so-called verbal learning. Sometimes such research has even dealt with lists of word-like nonsense assuming that the ability to deal

with such nonsense could be directly interpreted as language ability.

One-to-One Relationships

In the previous sections, some aspects of the lack of correspondence between words and morphemes have been pointed out. Problems with compounds, affixes and intonation were discussed. The illusion of a one-to-one correspondence between oral language units and written language units appears to stem from the treatment of words as entities. The oral name for the written word (in isolation from language) is assumed to be a unit of oral language.

In a sentence such as the following this illusion of one-to-one correspondence is illustrated: I'm going to have to find a way to get away tomorrow. One word away and two words a way sound very much the same. Morphophonemic rules cut across morpheme boundries in going to, have to, and to get. The literate reader is not bothered by this lack of close correspondence, in fact he will, in general, not be aware of it. He thinks that he reads every word, one at a time.

But for one learning to read this lack of correspondence will cause problems. If he matches oral names with graphic word shapes he becomes a word caller and may lose the meaning. He is dealing with print arranged in words but he must make his associations on higher language levels if he is to comprehend.

Words in Reading

It is no great revelation to first grade teachers that children frequently don't have any idea what words are. Perhaps

what has been said here will begin to explain why they don't. The implications of this understanding should lead in two directions: 1. Less word-centeredness in reading materials and instruction. 2. More careful development of word sense in beginners where it is necessary and possible.

Several simple steps can help to move the teaching of reading away from word focus. Essentially they involve shifting focus to comprehension; the goal of reading instruction becomes more effective reading for more complete comprehension. Instead of word attack skills, sight vocabularies, and word perception the program must be designed to build comprehension strategies. The presentation of words in isolation should be avoided wherever possible. Words are harder to read in isolation than in context and the isolation of words makes them ends in themselves.[8] Children learning to read should see words always as units of

8. Goodman, Kenneth S. "A Linguistic Study of Cues and Miscues in Reading", Elementary English, October, 1965, pp. 639-643.

larger, meaningful units. In that way they can use the correspondences between oral and written English within the semantic and syntactic contexts. As children induce these correspondences they will develop the strategies for using them in actual reading. They will be spared the need for transferring the correspondences from non-reading to reading.

As proficiency develops in reading, silent reading should predominate so that written language will become parallel to oral language; the child will then learn to go from print directly to

meaning with no need to resort to oral language.

The development of word sense is something which must be nurtured as reading progresses. Children will differentiate words from graphic language wholes just as they have learned to differentiate morphemes in oral language. First a learner knows a graphic sentence; then he knows familiar words in new sentences; finally he knows words anywhere including lists. Teachers can assist children by helping them to see phrases as subdivisions of sentences and words as recurrent elements within them.

Word meanings are also differentiated out of varied contexts. As the reader meets a word in various sentences he begins to form an idea of the part of the meaning assignable to that word. He then tests his definition in subsequent encounters. A dictionary can confirm his definition or sharpen it but it cannot supply a definition.

Conclusion

There will always be some problems in learning to read that result from the lack of close correspondence between the units or oral and written language. Instruction based on an understanding of language and language units can help to minimize these problems.